

(12) AUSTRALIAN PATENT ABSTRACT
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(54) THE FASTENER
(71) W.A. DEUTSHER PTY. LTD.
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(72) PETER KEVIN MCCULLY
(74) PO
(57) Claim

1. A flexible tie fastener including, a member having integral means which is engagable with an elongate support so as to releasably retain the fastener on that support,

a pair of flexible arms projecting outwardly from said member and being relatively arranged to receive an elongate article between them,

and locking means on the outer end portion of each said arm remote from said member being operative to releasably retain said outer end portions in overlapping relationship to hold said article against separation from said fastener.

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COMPLETE SPECIFICATION

(ORIGINAL)

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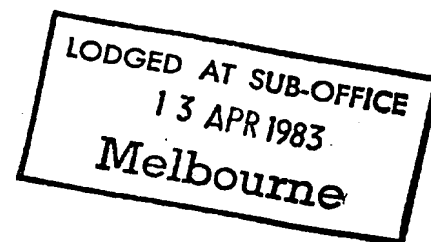
W.A. DEUTSHER PTY. LTD.

Address(es) of Applicant(s):

600 South Road,
Moorabbin, Victoria, 3189 Australia

Actual Inventor(s):

Peter Kevin McCully



Address for Service is:

PHILLIPS, ORMONDE & FITZPATRICK
Patent and Trade Mark Attorneys
367 Collins Street
Melbourne, Australia, 3000

Complete Specification for the invention entitled:

"TIE FASTENER"

The following statement is a full description of this invention, including the best method of performing it known to applicant(s):

This invention relates to flexible fasteners or ties for securing two or more elongate members against separation.

Flexible ties of the foregoing kind are well known, but generally have limited application and Australian patent 428,491 discloses one such tie fastener. In particular, such prior ties are not suited for securing elongate members to a wire or similar support. One such application of that kind is securing grape vine to trellis wire and it will be convenient to hereinafter describe the invention in relation to that particular application.

It is an object of the invention to provide an improved flexible tie of the aforementioned kind. It is a further object of the invention to provide such a tie which is particularly suited for securing elongate members such as vine to a wire or similar support.

According to the present invention, there is provided a flexible tie fastener including a member having integral means which is engageable with an elongate support so as to releasably retain the fastener on that support,

a pair of flexible arms projecting outwardly from said member and being relatively arranged to receive an elongate article between them,

and locking means on the outer end portion of each said arm remote from said member being operative to releasably retain said outer end portions in overlapping relationship to hold a said article against separation from said fastener.

The essential features of the invention, and further optional features, are described in detail in the following passages of the specification which refer to the accompanying drawings. The drawings however, are merely illustrative of

how the invention might be put into effect, so that the specific form and arrangement of the features (whether they be essential or optional features) shown is not to be understood as limiting on the invention.

In the drawings:

Figure 1 is a front elevation view of one embodiment of the invention;

Figure 2 is a side elevation view of the tie fastener shown in Figure 1;

10 Figure 3 is a cross sectional view taken along line 3-3 of Figure 1;

Figure 4 is a cross sectional view taken along line 4-4 of Figure 1;

Figure 5 is a perspective view of the tie fastener as shown in Figure 1;

Figure 6 shows one manner of use of the tie fastener according to Figure 1.

20 A tie according to the invention can be manufactured from any suitable material, but a thermo-plastic material such as nylon is usually preferred because of strength and economy of manufacture. The tie has a member 1 which is operative to engage a support and a pair of flexible arms 2 projecting outwardly from that member 1. The arms 2 are adapted to locate about an elongate member or members and can be retained against separation by overlapping their respective outer end portions 3. Locking devices 4 on those end portions 3 function to releasably retain them in their overlapped condition as shown in Figure 6.

30 It is preferred that the support engaging member 1 is snap engageable with a wire 5 or similar support as shown in

Figure 6. For that purpose, the support engaging member 1 may be a block-like member as shown having two spaced jaws 6 which are interconnected at their inner ends by a base 7 and are adapted for limited relative movement towards and away from each other. In the preferred arrangement shown, the jaws 6 are separated by an open ended recess or groove 8 having a restricted mouth 9 at the outer ends of the jaws 6 so that a wire 5 can be snap engaged into that groove 8. The jaws 6 may be of any suitable length, considered in the longitudinal direction of the groove 8 and relative movement of the jaws 6 may be achieved, at least in part, through flexibility of the interconnecting base 7. It is preferred that the outside surface 10 of the base 7 is substantially flat so as to facilitate location of the block-like member 1 on a wire 5. That is, the flat surface 10 provides a convenient surface against which finger pressure may be applied.

The tie arms 2 each extend outwardly from the outer end of a respective jaw 6 so as to project generally in a direction away from the base 7. As shown, each arm 2 is a relatively slim elongate member which may be of circular or other appropriate cross sectional shape. Also, as shown each arm 2 has an inner end portion 11 which may extend generally parallel to the corresponding portion 11 of the other arm 2, an intermediate portion 12 which is shaped as appropriate for the intended function of the tie and an outer end portion 3 having a locking device 4 as previously mentioned. The inner end portions 11 are preferably spaced apart by a distance substantially equal to the width of the jaw mouth 9.

The tie construction shown is suited for vine tying in that the intermediate portions 12 of the arms 2 bow outwardly relative to one another so as to define a relatively large vine receiving space 13 between them. The space 13 may be substantially circular as shown or of any suitable configuration, and a vine stem or branch can be introduced into that space 13 by separating the outer end portions 3 of the arms 2 as shown in broken line in Figure 1. In that regard, it is preferred that the outer end portions 3 are in engagement or at least in close relationship in the released or unstressed condition of the tie.

Each outer end portion 3 may be of curved configuration as shown so that those end portions 3 diverge outwardly towards their terminal ends and thereby define a V shaped entrance space 14 to facilitate insertion of a vine stem or branch into the receiving space 13. The locking device 4 is preferably a spherical enlargement at the outer terminal end of the arm 2, but enlargements of other shapes may be suitable.

In the form of the tie shown, the part of each arm 3 immediately adjacent to the respective locking enlargement 4 is of square or other non-circular cross section as that may assist in obtaining a secure retention in the operative condition of the tie.

When the tie is snapped on to a trellis wire 5 as shown in Figure 6, separation of the outer end portions 3 of the arms 2 allows one or more sections of vine 15 to be introduced into the space 13 between the intermediate portions 12 as shown in Figure 6. The vine 15 can be retained captive by the tie by twisting the outer end portions 3

of the arms 2 about one another so that they overlap with the respective locking devices 4 bearing against the other arm 2 to resist separation from that overlapped condition. The flexibility of the arms 2 allows them to be overlapped in that fashion and that flexibility also aids in the retention effect by causing the arms 2 to bear firmly against one another in the overlapped condition so that the locking devices 4 function as required.

10 In the overlapped condition, the arms 2 are twisted so that one extends across a top side, an outer side and then the lower side of the other. The locking device 4 of each arm bears against the inner side of the other arm to resist separation of the arms 2 from their twisted or overlapped condition.

20 It will be apparent from the foregoing description that the present invention provides a simple yet effective tie fastener. When applied to securing of vines, the fastener will hold the vine against or close to the trellis wire, but is nevertheless adapted to release the vine in response to a sharp tug on the vine. Because of the snap engagement with the wire the fastener can be left in place on the wire for reuse as required. Still further, the fastener is not easily dislodged from the wire because the wire receiving groove opens towards the same side as the arms receive the vine.

30 Various alterations, modifications and/or additions may be introduced into the constructions and arrangements of parts previously described without departing from the spirit or ambit of the invention as defined by the appended claims.

The claims defining the invention are as follows:

1. A flexible tie fastener including, a member having integral means which is engagable with an elongate support so as to releasably retain the fastener on that support,

a pair of flexible arms projecting outwardly from said member and being relatively arranged to receive an elongate article between them,

and locking means on the outer end portion of each said arm remote from said member being operative to releasably retain said outer end portions in overlapping relationship to hold said article against separation from said fastener.

2. A fastener according to claim 1, wherein said support engaging means comprises two spaced jaws defining a support receivable recess between them and which are arranged for limited relative movement to enable engagement with and release of a said support.

3. A fastener according to claim 2, wherein said recess has a restricted mouth and said jaws are arranged to snap engage about a said support.

4. A fastener according to claim 2 or 3, wherein said member is a block-like member, said recess is in the form of an open ended groove formed through an inner side of said member, the width of said groove being reduced adjacent said inner side to form a restricted mouth, and said member has a substantially flat outer side located remote from said inner side.

5. A fastener according to any one of claims 2 to 4, wherein said arms are formed integral with said member and each is connected thereto on a respective opposite side of said recess, and both said arms extend outwardly from said member in a direction away from the base of said recess.

6. A fastener according to any preceding claim, wherein each said arm is bowed outwardly away from the other said arm along an intermediate portion located between said member and the respective said outer end portion.

7. A fastener according to any preceding claim, wherein each said arm is of square cross-sectional shape at said outer end portion thereof and is of circular cross-sectional shape between said member and said outer end portion.

8. A fastener according to claim 2, wherein said member is a block-like member, said recess is in the form of an open ended groove formed through an inner side of said member, the width of said groove being reduced against said inner side to form a restricted mouth, each said arm has an inner end portion which is connected to said member on a respective opposite side of said recess, said inner end portions are separated by a distance substantially equal to the width of said restricted mouth and each said arm is bowed outwardly away from the other said arm over an intermediate portion located between the inner and outer end portions thereof.

9. A flexible tie fastener substantially as herein particularly described with reference to what is shown in the accompanying drawings.

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W.A. DEUTSHER PTY. LTD.

By its Patent Attorneys:

PHILLIPS, ORMONDE & FITZPATRICK

David B. Fitzpatrick

